

Estimate the annual Chinook Salmon escapement in the Copper River using fishwheels and a mark-recapture experiment

The purpose of this project was to use fishwheels and two-sample mark-recapture methods for long-term monitoring of Chinook salmon *Oncorhynchus tshawytscha* escapement on the Copper River. This report summarizes results from the 2005 field season, the fifth year since the project's inception. Objectives for 2005 were to: (1) estimate the annual, system-wide escapement of Chinook salmon to the Copper River using mark-recapture methods, such that the estimate was within 25% of the actual escapement 95% of the time; (2) develop a long-term monitoring program operated by the Native Village of Eyak (NVE). For the first sample event, three live-capture fishwheels were operated at Baird Canyon for 3,257 h from 9 May to 15 July. During this period, 3,674 adult Chinook salmon were captured and 3,379 fish were marked. For the second sample event, two fishwheels were operated at Canyon Creek near the lower end of Wood Canyon for 3,658 h from 14 May to 7 August. A total of 3,158 Chinook salmon were captured and 3,150 fish were examined for marks, of which 315 were recaptures. Using a modified Peterson estimator, estimated abundance of Chinook salmon measuring 600 mm FL or greater that migrated upstream of Baird Canyon from 9 May to 14 July was 30,333 (SE = 1,529). Given an estimated inriver harvest of 10,000 Chinook salmon, the spawning escapement in 2005 was 20,333 fish, which was 15.3% lower than the escapement goal of 24,000 or more spawners. This was the first time since the project's inception that the escapement goal was not met. The median travel time of fish marked at Baird Canyon and recaptured at Canyon Creek (~91 km upstream) was 12 d. With funding currently approved through 2006, and a proposal being reviewed for funding through 2009, this project has evolved into a successful and potentially long-term monitoring program that has made NVE an integral part of Copper River salmon research.

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